

REMARKS

This is intended as a full and complete response to the Office Action dated May 20, 2004, having a shortened statutory period for response set to expire on August 20, 2004. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1-19 and 39 remain pending in the application and are shown above. Claims 1-19 stand rejected by the Examiner. Claim 39 has been withdrawn from consideration by the Examiner. Reconsideration of the rejected claims is requested for reasons presented below.

The Examiner has maintained the restriction of claim 39 from claims 1-19. The Examiner states that although claim 39 is a product-by-process claim, product-by-process claims are directed to the product no matter how actually made, and that consequently, it is the patentability of the final product, and not the patentability of the process, that must be determined in a product-by-process claim. Applicants agree that the patentability of the product must be determined in a product-by-process claim. However, Applicants note that MPEP § 806.05(f) states that a process of making and a product made by the process can be shown to be distinct inventions if either or both of the following can be shown: (A) that the process as claimed is not an obvious process of making the product and the process as claimed can be used to make other and different products; or (B) that the product as claimed can be made by another and materially different process. Applicants respectfully submit that the Examiner has not shown that the process recited in claim 1 is not an obvious process of making the product of claim 39 and that the process recited in claim 1 can be used to make other and different products or that the product as claimed in claim 39 can be made by another and materially different process than the process recited in claim 1. Applicants respectfully request withdrawal of the restriction of claim 39 from claims 1-19 and consideration of claim 39.

Claims 1-4 and 6-17 stand rejected under 35 U.S.C. § 102(e) as being anticipated by *Todd* (U.S. Publication No. 2002/0016084). The Examiner states that *Todd* shows the method as claimed in a method of forming a nitrogen-doped SiC layer. Applicants respectfully traverse the rejection.

Todd describes the deposition of silicon nitride materials from precursors that contain N-Si bonds or from mixtures including an N-containing precursor and a Si-containing precursor (paragraphs [0027] and [0029]). *Todd* provides $(X_3Si)_3N$, $(X_3Si)_2N-N(SiX_3)_2$, $(X_3Si)N=N(SiX_3)$, and $(R_{3-m}SiX_m)_3N$, wherein m is 0, 1, or 2, wherein each X is individually selected from the group consisting of F, Cl, Br, H and D, and wherein each R is individually selected from the group consisting of methyl, ethyl, phenyl or tertiary butyl as precursors that contain N-Si bonds (paragraphs [0014], [0027]). *Todd* provides R_mNX_{3-m} , $X_{2-p}R_pN-NR_pX_{2-p}$, and $XN=NX$, wherein m is 0, 1, or 2, wherein p is 0 or 1, wherein each X is individually selected from the group consisting of F, Cl, H, and D, and wherein each R is individually selected from the group consisting of methyl, ethyl, phenyl, and tertiary butyl as preferred N-containing precursors (paragraph [0030]). However, *Todd* does not teach or suggest a precursor having the formula $NR_1R_2R_3$, wherein R_1 , R_2 , and R_3 are selected from the group consisting of alkyl and phenyl groups, as recited in claim 1. *Todd's* precursors containing N-Si bonds cannot have the formula $NR_1R_2R_3$, wherein R_1 , R_2 , and R_3 are selected from the group consisting of alkyl and phenyl groups, and *Todd's* formulae for N-containing precursors require either N-N bonds or N bonded to F, Cl, H, or D, and thus do not have the formula $NR_1R_2R_3$, wherein R_1 , R_2 , and R_3 are selected from the group consisting of alkyl and phenyl groups.

Thus, *Todd* does not teach, show, or suggest a method of depositing a low dielectric constant film on a substrate, comprising providing a gas mixture to a deposition chamber, wherein the gas mixture comprises a silicon source, a carbon source, and $NR_1R_2R_3$, wherein R_1 , R_2 , and R_3 are selected from the group consisting of alkyl and phenyl groups, and reacting the gas mixture while applying radio frequency (RF) power to form a nitrogen-containing silicon carbide layer on the substrate in the deposition chamber, as recited in claim 1. Applicants respectfully request withdrawal of the rejection of claim 1, and of claims 2-4 and 6-17, which depend thereon.

Claims 1-4 and 6-17 stand rejected under 35 U.S.C. § 102(e) as being anticipated by *Todd* (U.S. Patent No. 6,630,413). The Examiner notes that *Todd* (U.S. Publication No. 2002/0016084) is the PG publication of *Todd* (U.S. Patent No. 6,630,413). Applicants submit that claims 1-4 and 6-17 are patentable over *Todd* (U.S.

Patent No. 6,630,413) for the reasons discussed above with respect to *Todd* (U.S. Publication No. 2002/0016084) as *Todd* (U.S. Patent No. 6,630,413) describes the same precursors as *Todd* (U.S. Publication No. 2002/0016084) and does not teach or suggest a precursor having the formula $NR_1R_2R_3$, wherein R_1 , R_2 , and R_3 are selected from the group consisting of alkyl and phenyl groups. Applicants respectfully request withdrawal of the rejection of claim 1, and of claims 2-4 and 6-17, which depend thereon.

Claims 5 and 18-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Todd* (U.S. Publication No. 2002/0016084) or *Todd* (U.S. Patent No. 6,630,413). Regarding claim 5, the Examiner asserts that both *Todd* references enable the nitrogen-containing element to contain phenyl groups and alkyl groups may be present as well in the gas mixture, and that therefore, trimethylamine would be a substitution for the nitrogen providing gases disclosed to one of ordinary skill in the art. Applicants agree that both *Todd* references provide formulae for nitrogen-containing precursors that may contain phenyl and/or methyl, ethyl, or tertiary butyl groups. However, Applicants submit that neither *Todd* reference suggests or motivates using trimethylamine as the nitrogen-containing precursor. Trimethylamine does not correspond to any of the formulae provided by the *Todd* references for nitrogen-containing precursors. Applicants respectfully request withdrawal of the rejection of claim 5.

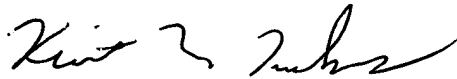
With respect to claims 18 and 19, Applicants submit that claims 18 and 19 are patentable over the *Todd* references for the reasons discussed above with respect to claim 1, upon which claims 18 and 19 depend. Applicants respectfully request withdrawal of the rejection of claims 18 and 19.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

The secondary references made of record are noted. However, it is believed that the secondary references are no more pertinent to the Applicant's disclosure than the primary references cited in the office action. Therefore, Applicant believes that a detailed discussion of the secondary references is not necessary for a full and complete response to this office action.

Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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